

CLAIMS

1. An information input apparatus comprising:
 - a light emitter for irradiating an object with light;
 - 5 an area image sensor for outputting a difference between charges received by light-receiving cells arranged in an array pattern from a reflected light of the object caused by said light emitter irradiating the object with light;
 - 10 a timing signal generator for generating a timing signal comprised of a pulse signal or a modulation signal for controlling an intensity of light of said light emitter;
 - 15 a control signal generator for generating a control signal for individually controlling light-receiving timings of the light-receiving cells of said area image sensor on the basis of the timing signal from said timing signal generator; and
 - 20 image processing means for extracting a reflected light image of the object from the difference outputted from said area image sensor.
2. The apparatus according to claim 1, wherein said area image sensor separately receives light in units of even lines or odd lines.
- 25 3. An information input apparatus comprising:
 - a timing signal generator for generating a timing signal comprised of a pulse signal or a modulation

signal;

a light emitter for emitting light, an intensity of which changes on the basis of the timing signal from said timing signal generator;

5 first light-receiving section for receiving light emitted by said light emitter and reflected by an object in synchronism with the timing signal from said timing signal generator; and

10 second light-receiving section for receiving light other than the light emitted by said light emitter and reflected by the object.

4. The apparatus according to claim 3, further comprising:

15 first imaging means for imaging the object reflected light received by said first light-receiving means; and

second imaging means for imaging the light other than the object reflected light and received by said second light-receiving means.

20 5. The apparatus according to claim 3, further comprising:

light splitting means for splitting light into the object reflected light and the light other than the object reflected light.

25 6. The apparatus according to claim 1, wherein said control signal generator selectively outputs a control signal for controlling said area image sensor

to sense a reflected light image of the object, and a control signal for controlling said area image sensor to sense a light image by the light other than the reflected light.

5 7. The apparatus according to claim 6, further comprising:

 a pass filter for passing only light emitted by said light emitter;

10 a cut filter for intercepting light emitted by said light emitter; and

 means for selecting one of the two filters upon passing light to be sensed.

 8. The apparatus according to claim 6, further comprising:

15 a pass filter for passing only light emitted by said light emitter;

 a cut filter for intercepting light emitted by said light emitter; and

20 switching means for selecting one of said pass filter and said cut filter in synchronism with the timing signal from said timing signal generator.

 9. The apparatus according to claim 6, further comprising:

25 light splitting section for splitting light into the object reflected light and the light other than the object reflected light;

 a selector for selecting whether the light is to

be passed or intercepted on optical paths of the split light beams; and

a synthesizing section for synthesizing the two light beams split by said light splitting section.

5 10. The apparatus according to claim 9, wherein said light splitting section has an element for selecting one of a state wherein only a light source wavelength is passed and a state wherein only visible light is passed.

10 11. The apparatus according to claim 9, wherein said light splitting section includes:

a first element for selecting one of a state wherein only a light source wavelength is passed and a state wherein all light components are passed; and

15 12. The apparatus according to claim 1, wherein a second element for selecting one of a state wherein only visible light is passed and a state wherein all light components are passed.

20 13. The apparatus according to claim 1, wherein the light-receiving cells of said area image sensor include cells for sensing a reflected light image, and cells for sensing a light image other than the reflected light.

25 14. The apparatus according to claim 3, wherein the light-receiving cells of said area image sensor include cells for sensing a reflected light image, and cells for sensing a light image other than the reflected light.

14. An information input method comprising the steps of:

generating a pulse signal or modulation signal;
generating, on the basis of the pulse or
5 modulation signal, a control signal for separately
controlling light-receiving timings of light-receiving
cells of an area image sensor for obtaining a
difference between charges received by light-receiving
cells which are arranged in an array pattern;
10 emitting light, an intensity of which changes on
the basis of the generated control signal; and
detecting a light image reflected by an object of
the emitted light.

15. An information input method comprising the steps of:

generating a pulse signal or modulation signal;
emitting light, an intensity of which changes on
the basis of the pulse or modulation signal; and
receiving light reflected by an object of the
20 emitted light and light other than the reflected light
in synchronism with the pulse or modulation signal.

16. An article of manufacture comprising:
a computer usable medium having computer readable
program code means embodied therein for causing an area
25 image sensor for obtaining a difference between charges
received by light-receiving cells which are arranged in
an array pattern to be controlled, the computer

readable program code means in said article of manufacture comprising:

5 computer readable program code means for causing a computer to generate a pulse signal or a modulation signal;

10 computer readable program code means for causing a computer to generate a control signal for separately controlling light-receiving timings of the light-receiving cells of said area image sensor on the basis of the pulse or modulation signal;

15 computer readable program code means for causing a computer to cause a light emitter to emit light, an intensity of which changes on the basis of the generated pulse signal or modulation signal; and

20 computer readable program code means for causing a computer to extract a light image reflected by an object of the emitted light from the difference outputted from said area image sensor.

17. An article of manufacture comprising:

20 a computer usable medium having computer readable program code means embodied therein for causing an area image sensor for obtaining a difference between charges received by light-receiving cells which are arranged in an array pattern to be controlled, the computer
25 readable program code means in said article of manufacture comprising:

computer readable program code means for causing a

computer to generate a pulse signal or a modulation signal;

5 computer readable program code means for causing a computer to cause a light emitter to emit light, an intensity of which changes on the basis of the pulse or modulation signal; and

10 computer readable program code means for causing a computer to cause the light-receiving cells to receive light reflected by an object of the emitted light and light other than the reflected light in synchronism with the pulse or modulation signal.